

What is claimed is:

1. A method of establishing a connection link in a communications network including a master device and a plurality of slave devices, wherein the communications network has a plurality of frequency channels within a radio frequency band for establishing the connection link, and wherein the connection link between the master device and the slave devices and the connection link among the slave devices are capable of being carried out in a frequency-hopping fashion, said method comprising the steps of:

5 establishing a non-frequency-hopping connection link between a first slave device and a second slave device if a communication channel for said non-frequency-hopping connection link is available; and

10 establishing or maintaining the connection link in the frequency-hopping fashion if the communication channel for said non-frequency-hopping connection link is unavailable.

2. The method of claim 1, further comprising the step of measuring channel conditions in at least a portion of the plurality of frequency channels for determining whether the communication channel for said non-frequency-hopping connection link is available based on the measured conditions.

3. The method of claim 2, wherein the channel conditions include carrier power of the measured channel and interference and noise levels affecting the non-frequency-hopping connection link.

4. The method of claim 2, wherein the measurement of the channel conditions is carried out by the first slave device.

5. The method of claim 4, further comprising the step of providing the first slave device a plurality of measurement parameters, including measurement time and frequencies to be measured, wherein the first slave device measures the channel conditions based on the measurement parameters.

6. The method of claim 4, further comprising the step of providing the master device a measurement report including results of the channel condition measurements.

7. The method of claim 6, further comprising the step of selecting a frequency for establishing said non-frequency-hopping connection link based on the measurement report.

8. The method of claim 7, further comprising the step of providing the first slave device and the second slave device a plurality of channel parameters including the selected frequency.

9. The method of claim 8, wherein the channel parameters further include a modulation code rate.

10. The method of claim 8, wherein the channel parameters further include a quality of service requirement.

11. The method of claim 3, wherein whether the communication channel for said non-frequency-hopping connection link is available is also determined based on transmission power of the first slave device.

12. The method of claim 3, wherein whether the communication channel for said non-frequency-hopping connection link is available is also determined based on transmission power of the second slave device.

13. The method of claim 1, further comprising the step of the first slave device sending a request to the master device requesting establishment of said non-frequency-hopping connection link.

14. A system for adaptive allocation of transmission channels for establishing a connection link in a non-frequency-hopping fashion within a communications network

including a master device and a plurality of slave devices, wherein the communications network has a plurality of frequency channels within a radio frequency band for establishing the connection link, and wherein the connection link between the master device and the slave devices and the connection link among the slave devices are capable of being carried out in a frequency-hopping fashion, and wherein said adaptive allocation is carried out to establish the non-frequency-hopping connection link between a first slave device and a second slave device, said system comprising:

a first mechanism for determining whether a communication channel for the non-frequency-hopping connection link is available;

a second mechanism for establishing the connection link between the first slave device and the second slave device in the non-frequency hopping fashion if the communication channel for the non-frequency-hopping connection link is available; and

a third mechanism for establishing or maintaining the connection link between the first slave device and the second slave device in the frequency-hopping fashion if the communication channel for the non-frequency-hopping connection link is unavailable.

15. The system of claim 14, wherein the first mechanism determines whether the communication channel for the non-frequency-hopping connection link is available based on channel conditions including carrier power of the frequency channels and interference and noise levels, which may affect the non-frequency-hopping connection link, said system further comprising a fourth mechanism for measuring the channel conditions.

16. The system of claim 15, wherein the channel conditions are measured based on a plurality of measurement parameters including measurement time and frequencies to be measured.

17. The system of claim 15, further comprising means for providing the master device a measurement report including results of the channel condition measurements for allowing the master device to select a frequency for establishing said non-frequency-hopping connection link based on the measurement report.

117 18. The system of claim 15, wherein the first mechanism determines whether the communication channel for the non-frequency-hopping connection link is available also based on transmission power of the first slave device.

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127 19. The system of claim 15, wherein the first mechanism determines whether the communication channel for the non-frequency-hopping connection link is available also based on transmission power of the second slave device.

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